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On the Treatment of some Forms of Stone in the
Bladder by Perinæal Lithotrity

With a Description of the Instruments used

BY

REGINALD HARRISON, F.R.C.S.

Surgeon to St Peter's Hospital, London

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On the Treatment of some Forms of Stone in the Bladder by Perinæal Lithotrity, with a Description of the Instruments used.

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Surgeon to St. Peter's Hospital, London.

I HAVE recently completed a record of over 400 operations for stone in the male bladder. These figures include instances of almost every recognised method of removing a calculus from this position, and though lithotrity, as I saw practised by my late friend, Professor Bigelow, of Boston, under the name of litholapaxy, largely predominates, lateral, median, and supra-pubic lithotomy, in their various modifications, have from time to time been utilised.

The greater number of persons thus operated upon were male adults up to 82 years of age, though these figures include 56 male children, who for the most part were treated by lateral lithotomy. As showing the safety with which the lateral operation can be practised in these young subjects, I may mention that only one death, or failure to recover completely, occurred, and this was due to chronic pyelitis some weeks after the operation.

The stones, removed by me in the course of these 400 operations, include almost every variety in known chemical composition, though the hard urates and oxalates were the more frequent. One of the largest specimens of cystic

calculus, weighing 1,050 grains, now in the Museum of the Royal College of Surgeons, was successfully removed by lateral lithotomy. Medium sized stones, from half an ounce to half a drachm in weight, were by far the most common, though some larger specimens, up to four ounces, occasionally presented.

These points are referred to incidentally for the purpose of showing that my practice has not been limited to one method of treatment, but has been varied to meet the different conditions under which stone in the bladder has come under my notice.

It may possibly be urged by some, considering the progress lithotritry has made during the present half century, that, save in instances where the stone is of such dimensions as to be beyond the capacity of any lithotrite, no other operation for its removal is now advisable. Such a view might be accepted if lithotritry, pure and simple, were always the entire success immediately and permanently we could desire. Mr. Cadge has pointed out in his Hunterian Lectures before the Royal College of Surgeons (1886), that the number of recurrences after the crushing operation, even in the hands of some of its warmest and most competent advocates, is such as to considerably detract from its completeness.

As in the case of other surgeons engaged in work of this kind, I may state in general terms, that my mortality has been a gradually decreasing one. Taking my last one hundred cases of stone operated upon by the various methods referred to, and excluding children and males under puberty, my number of deaths following crushing and nine cutting operations did not exceed five per cent. These cases, no doubt, at the present moment represent the best period of my work, and may be regarded as an outcome of the great advances that have been made in the operative treatment of stone in its various directions by Bigelow, Thompson, Cadge, Guyon, Keegan and Freyer, to each of whom we are indebted for something distinctive, in either the method or the application of treatment.

Fully recognising the work of these distinguished surgeons, I am at the same time disposed to give some prominence to three circumstances which have contributed in no small measure to the results I have arrived at : (1) To the earlier diagnosis of stone which now prevails, and the application of treatment before the calculus has attained any considerable dimensions ; (2) To the detection of a stone in the bladder with the sound, being concurrent with its removal ; and (3) To a more extended experience in selecting the most appropriate, and therefore safest operation.

The object of this paper, however, is to briefly describe a method of operating which has been found particularly applicable to some exceptional cases, and where the results obtained from it contributed materially to the small mortality of a series of operations which embraces both lithotomy as well as lithotrity.

It is not necessary for me to enter upon the history of perinæal lithotrity, and to trace the various modifications which have from time to time been described. The proceeding has been referred to by Dr. Gouley,¹ of New York, in the following words :—" The name of perinæal lithotrity was given in 1862, by Professor Dolbeau, of Paris, to an operation completed in one sitting by which the membranous portion of the urethra is opened, the prostate and neck of the bladder dilated, instead of being cut, and a large stone crushed, and the fragments immediately evacuated."

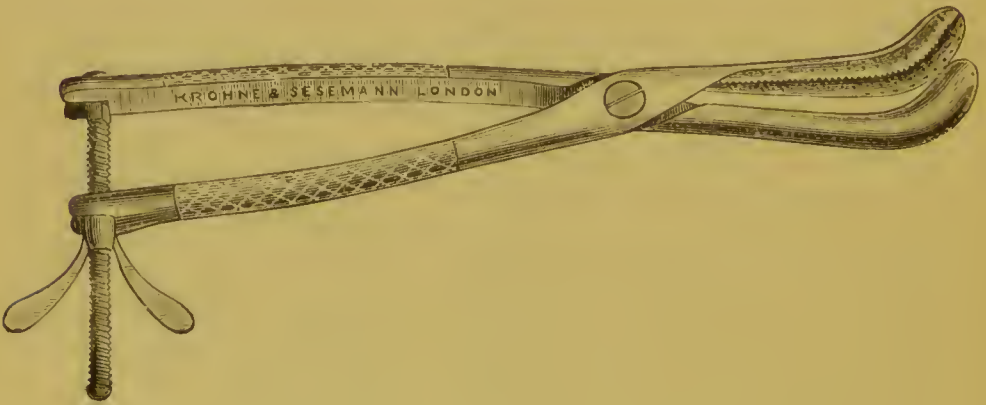
It was with this definition before me that I entered upon the study and practical application of the principles of this operation. I published my first communication² on perinæal lithotrity some years ago, and I have practised it in fourteen instances in male adults. In every example the operation was successful, recovery being rapid and complete, and I am not aware that recurrence of stone has in any one of these cases followed.

¹ " Diseases of the Urinary Organs," 1878.

² The *Lancet*, September 22, 1888.

The chief features in connection with the operation I am about to describe are : (1) The mode of obtaining access to the interior of the bladder from the perinæum ; and (2) The mechanism connected with crushing and evacuating the stone.

From a number of experiments I made on the dead subject as well as from the performance of median cystotomy on the living for various purposes, it seemed unnecessary to do more than to make an opening from the perinæum into the membranous urethra at the apex of the prostate, on a grooved staff passed along the urethra, sufficient to admit the introduction of Wheelhouse's small tapering gorget, and subsequently the index finger into the bladder, as for digital exploration, or, as is done in the boutonnière or Cock's operation—more than this is not necessary. In



Dolbeau's operation direct access to the bladder was obtained by this route, aided by the use of an expanding instrument by means of which the prostatic urethra and neck of the bladder were dilated. It seemed to me, from some experiments made on the cadaver, that the latter means of dilatation was not only unnecessary, but was open to the objection that unless used with the greatest care, it was possible to inflict serious damage.

Further, I succeeded in demonstrating that by means of crushing forceps, shaped somewhat like the blades of a lithotrite, and not exceeding by actual measurement in

circumference that of an ordinary index finger, sufficient power might be provided to crush and assist in evacuating any stone that could be fairly seized in this way. These forceps are provided with a cutting rib within the blades, and the more powerful instruments, as you will see from the specimens I am showing you, are fitted with a movable screw on the handle. The fragments may subsequently be withdrawn by means of aspirator catheters passed through the wound, or even by the forceps. If care is taken to make the perinæal wound correspond in size with the evacuating catheters, which should be of about the size of an ordinary index finger, there is no difficulty in keeping the bladder distended during the necessary manipulations.

The chief points in favour of this operation are these : (1) It enables the operator to crush and evacuate large stones in a short space of time. (2) It is attended with a very small risk to life as compared with other operations where any cutting is done, such as lateral or supra-pubic lithotomy, and is well adapted to old and feeble subjects. In his recent address, Mr. Swinford Edwards¹ shows that the latter operation for large stones has a mortality somewhere about 50 per cent. (3) It permits the operator to wash out the bladder, and any pouches connected with it, more effectually than by the urethra, as the route is shorter and the evacuating catheters employed of much larger calibre. (4) The surgeon can usually ascertain, either by exploration with the finger, or by the introduction of forceps into the bladder, that the viscus is cleared of all *débris*. (5) It enables the surgeon to deal with certain forms of prostatic outgrowth and obstruction complicated with atony of the bladder in such a way as to secure not only the removal of the stone, but the restoration of the function of micturition. (6) By the subsequent introduction and temporary retention of a soft rubber drainage-tube, states of cystitis due to the retention of urine in pouches and depressions in the bladder wall are either entirely cured, or are permanently improved. To lock up

¹ *Medical Press and Circular*, October 12, 1892.

unhealthy ammoniacal urine in a bladder that cannot properly empty itself after a lithotrity, is to court the formation or recurrence of a phosphatic stone. Hence it is well suited to some cases of recurrent calculus. I have never known the wound to remain unhealed, except in those instances where, for some reason or other, it has been desired to construct a low-level urethra, as in an instance I have recorded elsewhere.¹

It is well adapted for some cases of stone in the bladder complicated with stricture in the deep urethra, as it enables the surgeon to deal with both at the same time. Nor does it expose the patient to the risk which may be attendant where lithotrity is performed with a weakened or permanently damaged urethra. Dr. Bazy² has also recently illustrated its advantage under these circumstances.

I will conclude this paper with a brief record of three illustrative cases, and show the specimens removed :—

(1) A man, 24 years of age, who was cut for stone by a perinæal method ten years previously, came under my care in 1888 suffering from a large stone in the bladder and a small perinæal fistula, the result of the preceding operation. As I thought it best to try and remove the stone and close the fistula at the same time, I adopted the method I have described, and broke up with the forceps, and extracted a large phosphatic stone weighing nearly three ounces in a few minutes. The fistulous tract was doubtless included in the line of section. A drainage tube was introduced into the bladder through the wound. On the fifth day normal urine was discharged through the tube, when the latter was withdrawn, and the wound closed soundly in forty-eight hours. The patient was known to be well two years after this operation.

(2) A man, aged 52, came into St. Peter's Hospital in 1893, suffering from calculus and some form of prostatic

¹ "Surgical Disorders of the Urinary Organs," 4th edition, 1893, by Reginald Harrison. Churchill, London.

² *La Semaine Médicale*, February 17, 1893.

obstruction. The latter complication requiring attention I selected the perinæal method, and in a few minutes, partly with the crushing forceps, and partly with the evacuator catheter, I removed over three ounces of very hard urate calculus in addition to a polypoid excrescence of the prostate as large as a good-sized grape. A drainage tube was passed into the bladder through the wound, and the operation was completed without delay; the tube was retained for a week, and on its withdrawal the wound healed in a few days.

(3) The third case was that of a man, aged 62, whom I operated upon in 1890. He had undergone five operations previously by other surgeons for stone, which seemed to be primarily a urate calculus, and subsequently phosphatic. When I saw him, another stone had formed within eight months, his bladder was pouched and almost completely atonic, as he was largely dependent upon his catheter. The state of his bladder, irrespective of the size of the stone, led me to select perinæal lithotrity. There was a large post-prostatic pouch containing an ounce calculus, which was readily crushed by the forceps, and removed in a few minutes. I also twisted off a piece of prostatic out-growth, which seemed to act as a valve. A drainage tube was retained for over three weeks, when the urine being normal it was withdrawn. The wound healed soundly in the course of a few days. The power and function of the bladder has been completely restored, and there has been no recurrence of stone.

I have selected these three cases as illustrating conditions of complication which, not unfrequently, render lithotrity an imperfect success. The alternative operations of perinæal or supra-pubic lithotomy, as usually practised, would, I believe, have exposed the patients to a greater risk than I liked to incur. I therefore selected a proceeding which seems to me, whilst providing a most efficient and convenient means for rapidly removing a stone from the bladder, is, at all events, free from the risks of hæmorrhage and shock as not rarely attend the

older forms of lithotomy. If a stone could be dealt with as soon as it was retained in the bladder, no other operation than lithotrity would ever be practised, except, perhaps, in some few instances where a calculus is the natural consequence of some diseased condition within the bladder which is capable of being removed.